

REMARKS

Upon entry of this Amendment, claims 1-43 are pending in the Application.

Claim Objections

The Examiner objected to claim 18 because it was listed twice in Applicants' application. Applicants have corrected the second occurrence of claim 18 such that it is correctly numbered as claim 38. Applicants apologize for this typographical error and submit that the claim objection has been overcome.

102 Rejections

The Examiner has rejected claims 1, 4-14, and 19-43 under 35 U.S.C. 102(b) as being anticipated by Dutro (U.S. 3,561,751). The Examiner states on page 2, paragraph 3 of the Office action that Dutro discloses a foldover apparatus for interfolded sheets that includes a conveyor 22 with a guide plate 11, a forming plow 40, and a vacuum assembly 30 having a vacuum chamber 35. Applicants respectfully disagree.

Applicants respectfully submit that Dutro does not teach or suggest a forming plow, as recited in Applicants' claims. The Examiner identifies reference numeral 40 of Dutro as representing the forming plow of Dutro. Applicants respectfully submit that after reviewing the drawings and specification of Dutro, no element of the Dutro device is identified by reference numeral 40. Even the stationary shelf 51 of the Dutro device is not a forming plow as claimed because the signatures merely pass over the shelf, allowing the insertion of other sheets between the sheets of the signature. The shelf does not fold the signatures as the signatures move over the shelf. Applicants' claim 1 recites, among other things, that the foldover apparatus include a forming plow fixed relative to a conveyor, and a vacuum assembly adapted to separate at least a portion of at least one top sheet of the interfolded stack from the remaining portion of the stack and adapted to release the portion of the at least one top sheet into contact with the forming plow such that the portion of the at least one top sheet is folded over by the forming plow as the stack moves in the downstream direction. As the signatures move over the shelf of Dutro, no folding takes place. Rather, the signatures simply slide along the shelf and then fall off the shelf when the stack has passed downstream of the shelf.

Applicants respectfully submit that claim 1 is allowable over Dutro, and request that the Examiner withdraw the 102 rejection. Claims 2-11 depend from claim 1 and are therefore allowable for the same reasons as discussed with respect to claim 1, as well as for other reasons.

Independent claim 12 recites, among other things, a foldover apparatus for use downstream of an interfolding apparatus to receive a stack of interfolded sheets including a conveyor adapted to support and move the stack of interfolded sheets in the downstream direction, and a forming plow extending along a portion of one of the conveyor and a vacuum assembly. The vacuum assembly is configured to move at least one top sheet along one side of the forming plow such that the continued downstream motion of the at least one of the vacuum assembly and conveyor cause the portion of the at least one top sheet to be folded over by the folding plow. The distinctions noted above with respect to claim 1 apply equally to claim 12. Dutro does not teach a folding plow that is configured to cause at least a portion of a top sheet to be folded over as the stack of interfolded sheets travels in the downstream direction. Applicants respectfully submit that claim 12 is allowable. Claims 13-21 depend from claim 12 and are thus allowable for the same reasons as discussed with respect to claim 12, as well as for other reasons.

Independent claim 22 recites, among other things, a method of folding over a portion of at least one top sheet of an interfolded stack of sheets, the method including moving a portion of at least one top sheet of a stack of interfolded sheets along a forming plow and folding over the portion of the at least one top sheet. The distinctions noted above with respect to claim 1 apply equally to claim 22. Dutro does not teach moving a portion of at least one top sheet along a forming plow and folding over the portion of the at least one top sheet. Applicants respectfully submit that claim 22 is allowable. Claims 23-28 depend from claim 22 and are thus allowable for the same reasons as discussed with respect to claim 22, as well as for other reasons.

Independent claim 29 recites, among other things, a method of folding over a portion of at least two top sheets in an interfolded stack, the method including moving the portion of the at least two top sheets along the forming plow and folding over the portion of the at least two top sheets. The distinctions noted above with respect to claim 1 apply equally to claim 29. Dutro does not teach moving a portion of at least two top sheets along a forming plow and folding over the portion of the at least two top sheets. Applicants respectfully submit that claim 29 is allowable. Claims 30-35 depend from claim 29 and are thus allowable for the same reasons as discussed with respect to claim 29, as well as for other reasons.

Independent claim 36 recites, among other things, a method of folding over a portion of at least one top sheet of an interfolded stack of sheets, the method including moving a portion of at least one top sheet of a stack of interfolded sheets along a forming plow and folding over the portion of the at least one top sheet. The distinctions noted above with respect to claim 1 apply equally to claim 36. Dutro does not teach moving a portion of at least one top sheet along a forming plow and folding over the portion of the at least one top sheet. Applicants respectfully

submit that claim 36 is allowable. Claims 37-43 depend from claim 36 and are thus allowable for the same reasons as discussed with respect to claim 36, as well as for other reasons.

Dependent claims 4, 14, 24, 31, and 38 depend from independent claims 1, 12, 22, 29, and 36, respectively and are thus patentable for the reasons discussed above with respect to those independent claims. Additionally, dependent claims 4, 14, 24, 31, and 38 recite the use of a variable or adjustable strength vacuum to separate the portion of the at least one or two top sheets from the remainder of the stack and contain additional patentable subject matter.

Regarding the Examiner's assertion that Dutro teaches an adjustable vacuum assembly, Applicants respectfully submit that Dutro does not teach or suggest a vacuum that is adjustable in vacuum strength, but rather teaches a vacuum that is adjustable in timing of application, and adjustable in the number of times per revolution of the vacuum wheel the vacuum is applied. The adjustable vacuum in Applicants' claimed device and method is useful to accommodate sheets of varying thicknesses, as well as allowing for the lifting and folding of multiple sheets when desired. Nothing in Dutro teaches or suggests the use of an adjustable strength vacuum, nor is the desirability of such a vacuum taught or suggested in Dutro. Thus, Applicants respectfully submit that claims 4, 14, 24, 31, and 38 contain additional patentable subject matter and are patentable over Dutro.

Dependent claims 10, 17, 25, 32, and 41 depend from independent claims 1, 12, 22, 29, and 36, respectively, and are thus patentable for the reasons discussed above with respect to those independent claims. Additionally, dependent claims 10, 17, 25, 32, and 41 recite that the portion of the at least one top sheet that is separated from the stack is the folded edge. With reference to Figs. 4 and 11 of Dutro, it is the unfolded or free edge of the signatures in Dutro that is acted upon by the vacuum roll. Further, if the vacuum of Dutro were applied to the folded edge, the Dutro device would be rendered unsuitable for its intended purpose, as the purpose of separating the free edge of Dutro is to allow for insertion of other sheets inside the stack of signatures. If the folded edge were separated, it would not be possible to insert other sheets within the folded stack of signatures. Thus, claims 10, 17, 25, 32, and 41 contain additional patentable subject matter and Applicants respectfully submit that claims 10, 17, 25, 32, and 41 are patentable over Dutro.

The Examiner has also rejected claims 22, 25, 27-29, 32, 34-36, and 39-42 under 35 U.S.C. 102(b) as being anticipated by Marcalus (U.S. 3,207,361). On page 2, paragraph 4 of the Office action, the Examiner states that Marcalus discloses a method of folding over a portion of at least one top sheet in an interfolded stack that includes providing a stack of interfolded sheets, moving the stack along a path, separating a portion of at least one or two top sheets, moving the

portion adjacent a forming plow, releasing the portion into contact with the forming plow, and moving the portion along the forming plow, folding over the top portion.

As pointed out by the Examiner on page 3, paragraph 6 of the Office action, Marcalus is silent as to how the top portion is separated from the remainder of the stack. It is known in the prior art to insert a finger between the top sheet and the remainder of the stack as the stack is being built, and then use an air jet to blow the top sheet over onto the forming blade. Without any other teaching to the contrary, it appears that the Marcalus device likely utilizes a similar apparatus to move the leading section 20 of the top sheet into contact with the blade 44, creating the tail end 55. As such, the leading section never forms part of the stack of sheets (i.e., a complete, continuous stack of sheets), and therefore the leading portion of the top sheet cannot be separated from the remainder of the stack, as recited in claim 22.

Further, there is no teaching or suggestion of any device in Marcalus that releases the portion of the top sheet into contact with the blade, as is further recited in claim 22. Because there is no teaching of any device that grips or carries the leading portion to be released into contact with the blade, there is no teaching or suggestion of a device that performs the method of claim 22.

Therefore, Applicants respectfully submit that Marcalus does not teach or suggest each and every element of claim 22, and that claim 22 is allowable over the cited references. The Applicants respectfully request withdrawal of the 102 rejection and allowance of independent claim 22. Dependent claims 23-28 depend from claim 22, and are thus allowable for the same reasons as discussed with respect to claim 22, as well as for other reasons.

Independent claim 29 recites, among other things, a method of folding over a portion of at least two top sheets in an interfolded stack of sheets including separating the portion of the at least two top sheets from the remaining portion of the stack of interfolded sheets, and releasing the portion of the at least two top sheets along the forming plow. The distinctions presented above with respect to claim 22 apply equally with respect to claim 29. Marcalus does not teach a device that separates the portion of the sheets from the remaining portion of the stack, and further does not teach a device that releases the portion of the sheets along the forming plow.

In addition, Marcalus does not teach or suggest a method of folding over at least two top sheets in an interfolded stack, as recited in claim 29. The Examiner points to Col. 3, lines 15-25 of Marcalus as teaching the separation of two top sheets from the stack. With reference to Col. 3, lines 15-25, Marcalus teaches that an individual tissue may be formed of multiple plies, and thus the multiple ply top sheet can be folded over by the forming blade. The multiple plies still form a single sheet, and it is still a single sheet from the interfolded stack that is folded by the

forming blade. This is different than an apparatus that performs a method of folding over at least two sheets from the stack, as recited in Applicants' claim 29, as Applicants' claimed method includes the separation and folding over of at least two top sheets that are interfolded together that are then folded over again by the forming plow.

For these reasons as well as for other reasons not discussed, claim 29 is allowable over Marcalus. Claims 30-35 depend from claim 29 and are thus allowable for the same reasons as discussed with respect to claim 29, as well as for other reasons.

Independent claim 36 recites, among other things, a method of folding over a portion of at least one top sheet in an interfolded stack of sheets including separating the portion of the at least one top sheet from the remaining portion of the stack of interfolded sheets, and releasing the portion of the at least one top sheet on the first side of the forming plow. The distinctions presented above with respect to claim 22 apply equally with respect to claim 36. Marcalus does not teach a device that separates the portion of the at least one top sheet from the remaining portion of the stack, and further does not teach a device that releases the portion of the at least one top sheet along one side of the forming plow. Claims 37-43 depend from claim 36 and are thus allowable for the same reasons as discussed with respect to claim 36, as well as for other reasons.

Dependent claims 25, 32, and 41 depend from independent claims 22, 29, and 36, respectively, and are thus patentable for the reasons discussed above with respect to those independent claims. Additionally, dependent claims 25, 32, and 41 recite that the portion of the at least one top sheet that is separated from the stack is the folded edge. With reference to Fig. 6 of Marcalus, it is the unfolded or free edge of the signatures in Marcalus that is folded by the forming blade. There is no teaching or suggestion in Marcalus of any action on the folded edge. Thus, claims 25, 32, and 41 contain additional patentable subject matter and Applicants respectfully submit that claims 25, 32, and 41 are patentable over Marcalus.

103 Rejections

The Examiner has rejected claims 1, 4-14, 19-21, 23, 24, 26, 30, 31, 33, and 37-38 under 35 U.S.C. 103(a) as being unpatentable over Marcalus in view of Dutro. The Examiner states that Marcalus discloses all of the claim limitations, but does not disclose separating a top portion up an inclined path using a variable strength vacuum. The Examiner goes on to say that it would have been obvious to one of skill in the art to modify the device of Marcalus by using the inclined path and variable strength vacuum, as disclosed by Dutro.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. In re Vaeck, 947 F.2d 488, 493, 20 U.S.P.Q. 2d 1438, 1442 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. Id. Finally, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. In re Royka, 490 F.2d 981, 985, 180 U.S.P.Q. 580, 583 (CCPA 1974); MPEP §§706.02(j), 2143.03.

In establishing a *prima facie* case of obviousness, it is incumbent upon the Examiner to provide a reason why one of ordinary skill in the art would have been led to modify a prior art reference or to combine reference teachings to arrive at the claimed invention. Ex parte Clapp, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. & Int. 1985). The Examiner can only establish a *prima facie* case of obviousness by pointing out some objective teaching in the prior art references themselves that would lead one of ordinary skill in the art to combine the relevant teachings and the references. In re Fine, 837 F.2d at 1074, 5 U.S.P.Q.2d at 1598-99; In re Jones, 958 F.2d 347, 351, 21 U.S.P.Q.2d 1941, 1943-44 (Fed. Cir. 1992); MPEP §2143.01.

The Applicants respectfully submit that the Examiner has shown no motivation, in the cited references or otherwise, to modify the device of Marcalus with the vacuum of Dutro and thus, the combination of references is improper. Further, even if one combines the references, the resulting device would not work for its intended purpose. The vacuum wheel of Dutro lifts the edges of the signatures straight up and drops them onto the shelf to allow insertion of other sheets into the signatures. As made clear in Col. 3, line 72 – Col. 4, line 2 of Marcalus, the leading section 20 of the topmost tissue must be moved transversely toward its lengthwise fold and draped over the folding blade 44 to provide a dependent component 55. Thus, the leading section must be moved outside the width of the remainder of the stack of interfolded sheets for proper contact with the folding blade. If one combines the vacuum wheel of Dutro with the device of Marcalus, the vacuum would simply lift the sheets up and drop them down again, and would not release the sheets into contact with the forming plow, as recited in claim 1. Thus, the resulting combination would not teach or suggest the elements of Applicants' claims.

Without establishing the motivation to combine the references, and without showing a reasonable expectation of success in combining the references, a *prima facie* case of obviousness is not established.

Therefore, the Applicants respectfully submit that independent claim 1 is allowable over the prior art. Claims 2-11 depend from claim 1 and thus are allowable for the same reasons as discussed with respect to claim 1, as well as for other reasons not discussed herein.

Independent claim 12 recites, among other things, a foldover apparatus including a vacuum assembly adapted to separate a portion of at least one top sheet of an interfolded stack from the remaining portion of the stack and move the portion of the at least one top sheet on one side of a forming plow. The distinctions noted above with respect to claim 1 apply equally to claim 12. The combination of Marcalus and Dutro is improper because there is no motivation to combine the references, and even if you did combine the references, the combination would not teach or suggest the elements of claim 12. Thus, Applicants respectfully submit that claim 12 is allowable. Claims 13-21 depend from claim 12 and are thus allowable for the same reasons as discussed with respect to claim 12, as well as for other reasons.

Dependent claims 4, 14, 24, 31, and 38 depend from independent claims 1, 12, 22, 29, and 36, respectively and are thus patentable for the reasons discussed above with respect to those independent claims. Additionally, dependent claims 4, 14, 24, 31, and 38 recite the use of a variable or adjustable strength vacuum to separate the portion of the at least one or two top sheets from the remainder of the stack and contain additional patentable subject matter. Regarding the Examiner's assertion that Dutro teaches an adjustable vacuum assembly, Applicants respectfully submit that Dutro does not teach or suggest a vacuum that is adjustable in vacuum strength, but rather teaches a vacuum that is adjustable in timing of application, and adjustable in the number of times per revolution of the vacuum wheel the vacuum is applied. The adjustable vacuum in Applicants' claimed device and method is useful to accommodate sheets of varying thicknesses, as well as allowing for the lifting and folding of multiple sheets when desired. Nothing in Dutro teaches or suggests the use of an adjustable strength vacuum, nor is the desirability of such a vacuum taught or suggested in Dutro. Marcalus does not correct the deficiencies of Dutro as Marcalus does not teach or suggest the use of any vacuum to separate the portion of the at least one or two top sheets from the remainder of the stack, and as such does not teach the use of a variable strength vacuum. Even if there was motivation to combine Marcalus and Dutro, as suggested by the Examiner, the combination would not teach or suggest each and every element of Applicants' claims. Thus, Applicants respectfully submit that claims 4, 14, 24, 31, and 38 contain additional patentable subject matter and are patentable over Marcalus and Dutro.

Dependent claim 10 depends from independent claim 1, and thus is patentable for the reasons discussed above with respect to claim 1. Additionally, dependent claim 10 recites that the portion of the at least one top sheet that is separated from the stack is the folded edge. With reference to Figs. 4 and 11 of Dutro, it is the unfolded or free edge of the signatures in Dutro that is acted upon by the vacuum roll. Further, if the vacuum of Dutro were applied to the folded

edge, the Dutro device would be rendered unsuitable for its intended purpose, as the purpose of separating the free edge of Dutro is to allow for insertion of other sheets inside the stack of signatures. If the folded edge were separated, it would not be possible to insert other sheets within the folded stack of signatures. Marcalus does not cure the deficiencies of Dutro. It is clear from Fig. 6 of Marcalus that it is the free edge of the top sheet that is folded over the forming plow, and there is no teaching or suggestion that the folded edge be acted upon in the apparatus of Marcalus. Even if there was motivation to combine Marcalus and Dutro, as suggested by the Examiner, the combination would not teach or suggest each and every element of Applicants' claims. Thus, claim 10 contains additional patentable subject matter and Applicants respectfully submit that claim 10 is patentable over Marcalus and Dutro.

The Examiner has also rejected claims 1-21, 23-24, 26, 30-31, 33, and 37-38 under 35 U.S.C. 103(a) as being unpatentable over Marcalus in view of Aterianus, et al. (U.S. 4,231,558). The Examiner states that Marcalus discloses all limitations of the claims, but does not disclose separating a top portion up an inclined path using a variable strength vacuum and perforated belts. The Examiner goes on to state that Aterianus discloses a device that utilizes a variable strength vacuum and inclined, perforated belts 174 that separate a sheet from a conveyor, and that it would have been obvious to one of skill in the art to modify Marcalus by separating a top portion up an inclined path using a vacuum and perforated belts, as taught by Aterianus.

As discussed above, the burden is on the Examiner to establish the *prima facie* case of obviousness when making such a rejection. Aterianus discloses a device for accumulating articles, such as bags. The bag making drum 50 employs a vacuum to hold the web on the drum while the bag is formed, and the vacuum drum 170 strips the bags from the bag making drum such that the vacuum employed by the Aterianus device simply moves the bags from one drum to another. The bags are then carried by a vacuum conveyor 172, where they are removed by clamping units 180 and stacked. One of ordinary skill in the art of methods and apparatus for folding interfolded sheets would not look to such a device in trying to solve technical problems within the art. The Examiner has shown no motivation, outside of Applicants' application, to combine a vacuum device as taught by Aterianus with the device of Marcalus. Thus, Applicants respectfully submit that the combination of the device of Marcalus with the vacuum arrangement of Aterianus is improper.

Applicants respectfully submit that claim 1 is allowable over the cited references. Claims 2-11 depend from claim 1 and are thus allowable for the same reasons as discussed with respect to claim 1, as well as for other reasons.

Independent claim 12 recites, among other things, a foldover apparatus including a vacuum assembly adapted to separate a portion of at least one top sheet of an interfolded stack from the remaining portion of the stack and move the portion of the at least one top sheet on one side of a forming plow. The distinctions noted above with respect to claim 1 apply equally to claim 12. The combination of Marcalus and Aterianus is improper because there is no motivation to combine the references. Applicants respectfully submit that claim 12 is allowable. Claims 13-21 depend from claim 12 and are thus allowable for the same reasons as discussed with respect to claim 12, as well as for other reasons.

Dependent claims 4, 14, 24, 31, and 38 depend from independent claims 1, 12, 22, 29, and 36, respectively and are thus patentable for the reasons discussed above with respect to those independent claims. Additionally, dependent claims 4, 14, 24, 31, and 38 recite the use of a variable or adjustable strength vacuum to separate the portion of the at least one or two top sheets from the remainder of the stack and contain additional patentable subject matter. Regarding the Examiner's assertion that Aterianus teaches an adjustable vacuum assembly, Applicants respectfully submit that Aterianus does not teach or suggest a vacuum that is adjustable in vacuum strength, but rather teaches a vacuum that is adjustable in timing of application. The adjustable vacuum in Applicants' claimed device and method is useful to accommodate sheets of varying thicknesses, as well as allowing for the lifting and folding of multiple sheets when desired. Nothing in Aterianus teaches or suggests the use of an adjustable strength vacuum, nor is the desirability of such a vacuum taught or suggested in Aterianus. Marcalus does not correct the deficiencies of Aterianus as Marcalus does not teach or suggest the use of any vacuum to separate the portion of the at least one or two top sheets from the remainder of the stack, and as such does not teach the use of a variable strength vacuum. Even if there was motivation to combine Marcalus and Aterianus, as suggested by the Examiner, the combination would not teach or suggest the elements of Applicants' claims. Applicants respectfully submit that claims 4, 14, 24, 31, and 38 contain additional patentable subject matter and are patentable over Marcalus and Aterianus.

Dependent claims 10 and 17 depend from independent claims 1 and 12, respectively, and are thus patentable for the reasons discussed above with respect to those independent claims. Additionally, dependent claims 10 and 17 recite that the portion of the at least one top sheet that is separated from the stack is the folded edge. It is clear from Fig. 6 of Marcalus that it is the free edge of the top sheet that is folded over the forming plow, and there is no teaching or suggestion that the folded edge be acted upon in the apparatus of Marcalus. The vacuum roll of Aterianus does not act to remove a top sheet from a finished stack of sheets, but rather transfers a

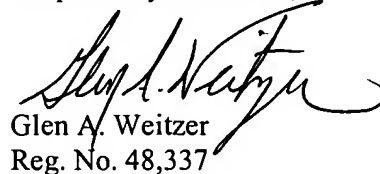
single formed back into a stacking apparatus. The vacuum of Aterianus does not teach or suggest separating a folded edge from a stack of sheets on its own, and even if Marcalus and Aterianus were combined, the combination would not teach or suggest a vacuum device acting upon the folded edge of the top sheet of the finished stack. Thus, claims 10 and 17 contain additional patentable subject matter and Applicants respectfully submit that claims 10 and 17 are patentable over Marcalus and Aterianus.

With respect to claims 23 and 26, each of those claims depend from claim 22, and are thus allowable for the reasons discussed above with respect to claim 22, as well as for other reasons not discussed herein. With respect to claims 30 and 33, each of those claims depends from claim 29, and is thus allowable for the reasons discussed above with respect to claim 29, as well as for other reasons not discussed herein. With respect to claim 37, claim 37 depends from claim 36, and is thus allowable for the reasons discussed above with respect to claim 36, as well as for other reasons not discussed herein.

For all of these reasons, entry of this Amendment and allowance of claims 1-43 are respectfully requested.

The undersigned is available for a telephone conference at any time.

Respectfully submitted,



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